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10/550,468	08/18/2006	Christoph Rickert	05-726	1942
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MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP			EXAMINER	
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32ND FLOOR				
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			04/14/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/550,468

**Applicant(s)**

RICKERT ET AL.

**Examiner**

MICHAEL N. ORLANDO

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) 26-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-894)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 09/22/2005; 11/03/2005; 07/01/2008; 10/20/2008



## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of claims 1-25 in the reply filed on 02/11/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 26-53 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected methods, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02/11/2009.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 5-8 recite the limitation "the epoxy resin". There is insufficient antecedent basis for this limitation in the claim since the claim is dependent from claim 1 which does not mention an epoxy resin. It is unclear what the applicant is referring to.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 1-5, 7-8, 10-20 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager et al. (US 6,576,718) in view of Capote et al. (US 2001/0020071) and further in view of Keehan (US 6,391,979).

Regarding claims 1, 5, 7, 8 and 10, Yeager discloses a curable powder coating composition that can be made by mixing, melt extruding, grinding and classifying (abstract; column 11, lines 33-36); but as set forth by Yeager the method of producing powder coatings is conventional (column 11, lines 25-28). Yeager discloses that the powder coating contains an epoxy (column 4, lines 25-27) and dicyandiamide, which is a hardener (column 5, lines 20-24). The powder coating may also contain fillers such as silica and plasticizers (column 10, lines 53-57). Yeager also discloses a desire for a high Tg (column 4, lines 60-65) and a desire for good dielectric properties (column 16, line 43). Also, note that Yeager discloses that the coating should be durable and resistant (column 12, lines 34-40). In addition Yeager discloses the use of multifunctional epoxy resins, epoxies such as cresol-novolak-epoxy and phenol-novolak-epoxy and epoxy resins such as solid bisphenol A diglycidyl ether (column 4, line 35 - column 5, line 5).

Yeager fails to explicitly teach the use of the Tg range presently claimed and fails to teach the inclusion of maleimides and/or cyanate esters, but as set forth above is drawn to an epoxy resin based stable coating.

Capote, drawn to epoxy resin based coatings, discloses that in addition to the traditional epoxy resin additions cyanate esters and bismaleimides may also be added and each possess certain desirable properties ([0003]-[0019]). Capote specifically discloses that known benefits and drawbacks to each of the resins ([0005]-[0007]).

It would have been obvious to one having ordinary skilled artisan to have further included cyanate esters and/or bismaleimides in the invention of Yeager because they each possess certain properties that help to overcome some of the deficiencies of

epoxies alone. An ordinary skilled artisan would have been motivated to add one or both in order to obtain an improvement in T<sub>g</sub> and crosslink density and/or improved performance at higher temperatures ([0006]-[0007]). As to the T<sub>g</sub> values of over 160.degrees.C such is obvious in view of Yeager's desire to maintain storage stability and in view of the fact that Capote provides the necessary T<sub>g</sub> raising additive (cyanate esters), so the arrival at 160.degrees.C. or higher is obvious absent a showing of unexpected results. The examiner further notes though that such high T<sub>g</sub> values were already known through the teachings of Keehan, for example, so clearly an ordinary skilled artisan would have found it obvious to use high T<sub>g</sub> values since such is known for providing a product with good chemical resistance (column 2, lines 1-4). The inclusion of cyanate esters and/or bismaleimides reads on claim 8 since the inclusion of oxazines is not positively recited as having to be present.

Regarding claims 2-4, the epoxy resin is preferably solid at room temperature and therefore obviously has a T<sub>g</sub> at above 20.degrees.C since it is not in liquid form at room temperature (column 4, lines 34-38).

Regarding claim 9, Capote discloses the cyanate esters, that as set forth above would have been an obvious incorporation, can be polyfunctional ([0042]). Such would have been obvious because Capote discloses them as a suitable choice whereby they would have been incorporated as set forth above. Capote also discloses that some polyfunctional cyanate esters can even provide better dielectric properties ([0043]), which as set forth above are desired by Yeager. With respect to 10, the oxazine and maleimide are not positively cited as being present.

Regarding claims 11 and 12, the dicyandiamide hardener has been addressed above.

Regarding claim 13, Yeager discloses the use of a catalyst (column 5, line 14), which is taken as an initiator. The term catalyst is defined as a substance that causes (i.e. initiates) or accelerates a chemical reaction, so therefore it reads on an initiator. As to the amount, absent a showing of unexpected results it is taken as obvious to modify the amount of catalyst to obtain the desired balance of reaction progression and cost. Clearly it can be appreciated that increased catalyst increases costs but also increases reaction speed (up to the point of saturation). An ordinary skilled artisan would have determined their desired balance of cost and reaction time.

Regarding claim 14, Yeager discloses a number of additives that be taken to read upon the broad term "coating additive" such as plasticizers, flow additives, thickeners and antistatic agents (column 10, line 52-56). The additive are discloses by Yeager as being used as a minor component such as in the range of 0-30% (column 11, lines 22-25), which overlaps the present claims.

Regarding claims 15, 16, Yeager discloses the use of pigments which may be organic or inorganic and are used in the amount of 0-30 wt% (column 10, line 52 - column 11, line 14).

Regarding claim 17, as set forth above the use of silica is appreciated by Yeager.

Regarding claim 18, Yeager does not explicitly disclose the particle size of the pigments, but an ordinary skilled artisan would have understood that small particles allow for better distribution because clearly large particles would create flow problems



and would not be dispersed as evenly giving a less uniform color. It is also noted that the powder of Yeager is applied via spraying and with particle sizes of 15-75 microns (column 11, lines 55-60). Clearly if the entire particle size of the powder can be as low as 15 microns than the particle sizes of the pigments (a minor component that makes up part of the powder particles) would obviously be less than 15 microns.

Regarding claim 19 and 20, the applicant is seeking to claim physical properties when there is really no way for the examiner to compare them to the prior art because of lack of specificity. Furthermore, such is dependent on the processing conditions of the powder. It is presumed that among the many additives disclosed by Yeager some possess these properties and unless the applicant can provide proof that these are in fact unexpected properties and are not present in the teachings of Yeager than this appears to be nothing more than the recitation of physical properties that amount to more of an artifact of the powder rather than an inventive step.

Regarding claims 22-24, the applicant is seeking to claim physical properties of the powder coating in regard to storage stability, dielectric constant and thermal expansion. It is first noted Yeager discloses the desire for good dielectric properties, good storage stability, as set forth above, and since the powder formulations are similar to those of the prior art, it is obvious that coefficients of thermal expansion would be similar. The patent office does not possess the experimental equipment to carry out experiments and determine if the physical properties are patentably distinguishing features. In this case since the powder formulations are so similar the properties are

obviously expected to be similar and the burden would be on the applicant to show otherwise.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager, Capote, and Keehan, as applied above, and further in view of Marx et al. (US 6,359,080).

Regarding claim 6, the epoxy equivalent weight is not specifically divulged by Yeager; However, Yeager importantly provides that the epoxy utilized is not really restricted (column 4, lines 25-28) so it would have therefore been obvious to use the presently claimed epoxy. Such would merely amount to the selection of a preferred material and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. In this case the benefits of epoxies are clearly laid out and it would have been an obvious choice to increase the ratio of epoxy in order to add more of these beneficial properties (column 2, lines 1-5). More evidence/support for obviousness is provided below.

Marx, drawn to powder coatings, indicates that epoxy equivalent weight is a result effective variable and one of ordinary skill therefore would have found it obvious to increase the epoxy equivalent weight in order to increase the storage stability and T<sub>g</sub> (column 3, lines 3-8) of the epoxy. Note that Yeager specifically recognizes that storage stability is important (column 4, lines 60-67).

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager, Capote, and Keehan, as set forth above, and further in view of Macholdt et al. (US 5,073,579).

Regarding claim 10, as set forth above, Capote recognizes the use of multifunctional maleimides. Neither Capote nor Yeager though recognize the use of oxazines.

Macholdt, drawn to electrostatic spray coating, discloses that such coatings are typically epoxy based coating that are sprayed (column 1, lines 46-48) and discloses that oxazine compounds can be added to the powder coatings (column 1, lines 9-15).

It would have been obvious to have added oxazines to the invention of Yeager because such were known for enhancing the electrostatic chargeability of powder coatings and allowing for a more uniform deposition onto substrates (column 23-30). This is particularly applicable and would have commended the attention of an ordinary skilled artisan because Yeager utilizes electrostatic spray coating for the powder (column 11, lines 57-65). As to the functionality Macholdt recognizes the use of "oxazines" in general so absent an exclusion of multifunctional oxazines such would have been expected to produce similar results because both monofunctional and multifunctional oxazines fall under the class of oxazines.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager, Capote, and Keehan, as applied above, and further in view of Ring et al. (US 2001/0006993).

Regarding claim 21, Yeager does not explicitly disclose the use of fluorinated thermoplastics though does disclose the aesthetic appearance of the final coating is very important and in many cases textured finishes are desired (column 12, lines 30-34).

Ring, drawn also to powder coatings ([0002]-[0006]), discloses that thermoplastic additives can be added to thermosetting powder coating (such as that of Yeager) in order to provide texture ([0012]).

An ordinary skilled artisan would have been motivated to add a fluorinated thermoplastic such as PTFE because Ring specifically provides that such can be added to thermosetting powder coating formulations in order to provide a textured finish ([0012]). As set forth above Yeager both appreciates and desires textured finishes.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager, Capote, and Keehan, as set forth above, and further in view of Harano et al. (US 5,510,428).

Regarding claim 25, as set forth above the use of epoxy, cyanate ester and dicyandiamide are known. Though the specific amounts are not explicitly stated the functionality of each is set forth and therefore absent a showing of unexpected results it would have been obvious to optimize the amount of dicyandiamide in order to control the curing, obvious to optimize the epoxy to get the desired level of chemical resistance, corrosion resistance, adhesion and processability, and would have been obvious to optimize the level of cyanate ester to get the desired level of crosslink density and glass transition temperature (see Capote teachings above). Generally, differences in

concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

While, Yeager discloses the use of many similar imidazole type epoxy curing agents, Yeager fails to explicitly teach the use of 2-phenylimidazole.

Harano, drawn to epoxy based compositions, discloses that in addition to many of the epoxy curing agents of Yeager (i.e. many are recognized in both Yeager and Harano), 2-phenylimidazole is another suitable choice (column 13, line 60).

It would have been obvious for an ordinary skilled artisan to have additionally used 2-phenylimidazole in view of Harano because such is merely another well known epoxy curing agent that could have been used to further the cure of Yeager's epoxy based powder composition. Use of a known production for a known purpose to improve a similar process in the same way is taken as obvious. In this case 2-phenylimidazole is a known epoxide curing agent and the applicant seeks to add it to the powder formulation as an epoxide curing agent. The optimization of amounts is addressed above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wang et al. (US 5,340,912) additionally discloses that cyanate

esters were known for imparting low electric constants and high glass transition temperatures (column 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL N. ORLANDO whose telephone number is (571)270-5038. The examiner can normally be reached on Monday-Thursday, 7:30am-4:30pm, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip C. Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Philip C Tucker/

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Supervisory Patent Examiner, Art Unit 1791